THE FORVM

On the Family Bruchidae

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In the seemingly mad rush to again submerge the Bruchidae to a subfamilial status in the Chrysomelidae, perhaps the defense for retaining it as a separate family should be stated. Whereas the relationships of the Bruchidae with the rest of the Chrysomelidae, especially with the Sagrinae, is not denied, a combination of characteristics peculiar to the Bruchidae is sufficient in my mind to keep it as a distinct family taxon.

The following is my concept of the family: The family Bruchidae is apparently a monophyletic, exclusively spermatophagus, chrysomeloid group springing from a common ancestor with the chrysomelid subfamily Sagrinae (Crowson 1946, Monros 1955). Similarities in wing venation, male genitalia, form of the metafemur, presence of tibial spurs, internal feeding by the larvae and other characters point to a relatively recent divergence of the bruchids followed by the development of spermophagy to a fine degree.

Adults—Body surface setose, sometimes obscurely so; head hypognathous or opisthognathous; ocelli absent; eye shallowly to deeply emarginate; antenna 11-segmented with insertion adjacent to eye; mandibular apex acute, medial margin entire, not dentate; gular sutures short, ending in tentorial pits; frontoclypeal suture well-marked; elytral striae always present, usually 10 in number; metatibia usually longitudinally carinate; tarsal claws appendiculate (!)*; pygidium exposed beyond elytral apices (!); male genitalia with base of median lobe and ventral strut of tegmen modified into a pump to evert internal sac during copulation (!); lateral lobes (parameres) always present (!).

Larvae—Labial sclerome present in instars 2-4 (!); legs reduced or absent (except some first instar forms); mandible gouge-shaped; pronotal sclerites present in first instar (!) (Pfaffenberger and Johnson 1976).

Habits—Larvae feed exclusively in seeds (!); oviposition always on seed or on envelope containing seeds (!); pupation occurs in larval feeding chamber in seed (!); mature larvae bores tunnel to seed surface, or sometimes to envelope or pod surface before returning to cavity to pupate; about 80% of the species are associated with leguminous host plants (Johnson 1970).

Monros (1955) regarded the Bruchidae as a subfamily of the Chrysomelidae. The groups seemingly nearest to the Sagrinae are in the bruchid subfamily Pachymerinae, especially the genera *Caryoborus* and *Caryobruchus*. Although resemblance of the sagrine *Carpophagus* to these pachymerines is striking, Crowson (1946) did not think that the latter genus was in any way related to the Bruchidae. Without knowing what bruchid species he used in his comparison, I am of the opinion that *Carpophagus* has more in common with the pachymerine genera than does any other chrysomeloid genus with the following similarities: male genitalia with a simple, curved, tubular median lobe, bases of the lateral lobes fused straplike with only the apices expanded; absence of a crop in the digestive system (Kasap 1978); swollen metafemur with ventral denticles; metepisternum with an angular sulcus (also found in some primitive Cerambycidae); similar wing venational patterns including the presence of a wedge cell in some species (Suzuki 1969); larvae as internal feeders in plants (sagrines in stems or crowns, pachymerines in seeds).

* (!) indicates a character found in all Bruchidae but not restricted to the family.

Differences (mostly external)

Elytra throughout the family Bruchidae are always striated whereas those of *Carpophagus* and most other sagrines lack distinct striae; frons in the pachymerines with a median carina, sagrines with an X-shaped sulcus; larval mandibles gouge-shaped in pachymerines, toothed in those sagrines whose larvae are known. Maulik (1941) presented useful comparative characters for the Sagrinae.

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THE FORVM *is a place for exchange and discussion of ideas related to the Chrysomeloidea. Opposing points of view are always welcome—ed.*